

INTEGRATIVE CASE 2.0

Rondell Data Corporation*

CASE

2.0

"Damn it, he's done it again!" Frank Forbus threw the stack of prints and specifications down on his desk in disgust. The Model 802 wide-band modulator, released for production the previous Thursday, had just come back to Frank's Engineering Services Department with a caustic note that began, "This one can't be produced either. . . ." It was the fourth time production had kicked the design back.

Frank Forbus, director of engineering for Rondell Data Corporation, was normally a quiet man. But the Model 802 was stretching his patience; it was beginning to look just like other new products that had hit delays and problems in the transition from design to production during the eight months Frank had worked for Rondell. These problems were nothing new at the sprawling old Rondell factory; Frank's predecessor in the engineering job had run afoul of them, too, and had finally been fired for protesting too vehemently about the other departments. But the Model 802 should have been different. Frank had met two months before (July 3, 1998) with the firm's president, Bill Hunt, and with the factory superintendent, Dave Schwab, to smooth the way for the new modulator design. He thought back to the meeting. . . .

"Now we all know there's a tight deadline on the 802," Bill Hunt said, "and Frank's done well to ask us to talk about its introduction. I'm counting on both of you to find any snags in the system and to work together to get that first production run out by October 2nd. Can you do it?"

"We can do it in production if we get a clean design two weeks from now, as scheduled," answered Dave Schwab, the grizzled factory superintendent. "Frank and I have already talked about that, of course. I'm setting aside time in the machine shop, and we'll be ready. If the design goes over schedule, though, I'll have to fill in with other runs, and it will cost us a bundle to break in for the 802. How does it look in engineering, Frank?"

"I've just reviewed the design for the second time," Frank replied. "If Ron Porter can keep the salesmen out of our hair and avoid any more last-minute changes, we've got a shot. I've pulled the draftsmen off three other overdue jobs to get this one out. But, Dave, that means we can't spring engineers loose to confer with your production people on manufacturing problems."

"Well, Frank, most of those problems are caused by the engineers, and we need them to resolve the difficulties. We've all agreed that production bugs come

from both of us bowing to sales pressure, and putting equipment into production before the designs are really ready. That's just what we're trying to avoid on the 802. But I can't have 500 people sitting on their hands waiting for an answer from your people. We'll have to have some engineering support."

Bill Hunt broke in. "So long as you two can talk calmly about the problem I'm confident you can resolve it. What a relief it is, Frank, to hear the way you're approaching this. With Kilmann (the previous director of engineering) this conversation would have been a shouting match. Right, Dave?" Dave nodded and smiled.

"Now there's one other thing you should both be aware of," Hunt continued. "Doc Reeves and I talked last night about a new filtering technique, one that might improve the signal-to-noise ratio of the 802 by a factor of two. There's a chance Doc can come up with it before the 802 reaches production, and if it's possible, I'd like to use the new filters. That would give us a real jump on the competition."

Four days after that meeting, Frank found that two of his key people on the 802 design had been called to production for emergency consultation on a bug found in final assembly: two halves of a new data transmission interface wouldn't fit together because recent changes in the front end required a different chassis design for the back end.

Another week later, Doc Reeves walked into Frank's office, proud as a new parent, with the new filter design. "This won't affect the other modules of the 802 much," Doc had said. "Look, it takes a few connectors, some changes in the wiring harness, and some new shielding, and that's all."

Frank had tried to resist the last-minute design changes, but Bill Hunt had stood firm. With a lot of overtime by the engineers and draftsmen, engineering services should still be able to finish the prints in time.

Two engineers and three draftsmen went onto 12-hour days to get the 802 ready, but the prints were still five days late reaching Dave Schwab. Two days later, the prints came back to Frank, heavily annotated in red. Schwab had worked all day Saturday to review the job and had found more than a dozen discrepancies in the prints—most of them caused by the new filter

*John A. Seeger, Professor of Management, Bentley College. Reprinted with permission.

design and insufficient checking time before release. Correction of those design faults had brought on a new generation of discrepancies; Schwab's cover note on the second return of the prints indicated he'd had to release the machine capacity he'd been holding for the 802. On the third iteration, Schwab committed his photo and plating capacity to another rush job. The 802 would be at least one month late getting into production. Ron Porter, vice president for sales, was furious. His customer needed 100 units NOW, he said. Rondell was the customer's only late supplier.

"Here we go again," thought Frank Forbus.

Company History

Rondell Data Corporation traced its lineage through several generations of electronics technology. Its original founder, Bob Rondell, had set the firm up in 1939 as "Rondell Equipment Company" to manufacture several electrical testing devices he had invented as an engineering faculty member at a large university. The firm branched into radio broadcasting equipment in 1947 and into data transmission equipment in the late 1960s. A well-established corps of direct salespeople, mostly engineers, called on industrial, scientific, and government accounts but concentrated heavily on original equipment manufacturers. In this market, Rondell had a long-standing reputation as a source of high-quality, innovative designs. The firm's salespeople fed a continual stream of challenging problems into the Engineering Department, where the creative genius of Ed "Doc" Reeves and several dozen other engineers "converted problems to solutions" (as the sales brochure bragged). Product design formed the spearhead of Rondell's growth.

By 1998, Rondell offered a wide range of products in its two major lines. Broadcast and telecommunications equipment sales now accounted for more than half of company sales. In the field of data transmission, an increasing number of orders called for unique specifications, ranging from specialized display panels to entirely untried designs.

The company had grown from a few dozen employees in the early years to over 800 in 1998. (Exhibit 1 shows the 1998 organization chart of key employees.) Bill Hunt, who had been with the company since 1972, had presided over much of that growth, and he took great pride in preserving the "family spirit" of the old organization. Informal relationships between Rondell's veteran employees formed the backbone of the firm's day-to-day operations; all the managers relied on personal contact, and Hunt often insisted that the absence of bureaucratic red tape was a key factor in recruiting outstanding engineering talent. The personal management approach extended throughout the factory. All exempt employees were paid on a straight salary plus a share of the profits. Rondell boasted an extremely loyal group of senior employees and very low turnover in nearly all areas of the company.

The highest turnover job in the firm was Frank Forbus's. Frank had joined Rondell in January 1998, replacing Jim Kilmann, who had been director of engineering for only 10 months. Kilmann, in turn, had replaced Tom MacLeod, a talented engineer who had made a promising start but had taken to drink after a year in the job. MacLeod's predecessor had been a genial old-timer who retired at 70 after 30 years in charge of engineering. (Doc Reeves had refused the directorship in each of the recent changes, saying, "Hell, that's no promotion for a bench man like me. I'm no administrator.")

For several years, the firm had experienced a steadily increasing number of disputes between research, engineering, sales, and production people—disputes generally centered on the problem of new product introduction. Quarrels between departments became more numerous under MacLeod, Kilmann, and Forbus. Some managers associated those disputes with the company's recent decline in profitability—a decline that, in spite of higher sales and gross revenues, was beginning to bother people in 1998. President Bill Hunt commented:

Better cooperation, I'm sure, could increase our output by 5–10 percent. I'd hoped Kilmann could solve the problems, but pretty obviously he was too young, too arrogant. People like him—conflict type of personality—bother me. I don't like strife, and with him it seemed I spent all my time smoothing out arguments. Kilmann tried to tell everyone else how to run their departments, without having his own house in order. That approach just wouldn't work here at Rondell. Frank Forbus, now, seems much more in tune with our style of organization. I'm really hopeful now.

Still, we have just as many problems now as we did last year. Maybe even more. I hope Frank can get a handle on engineering services soon. . . .

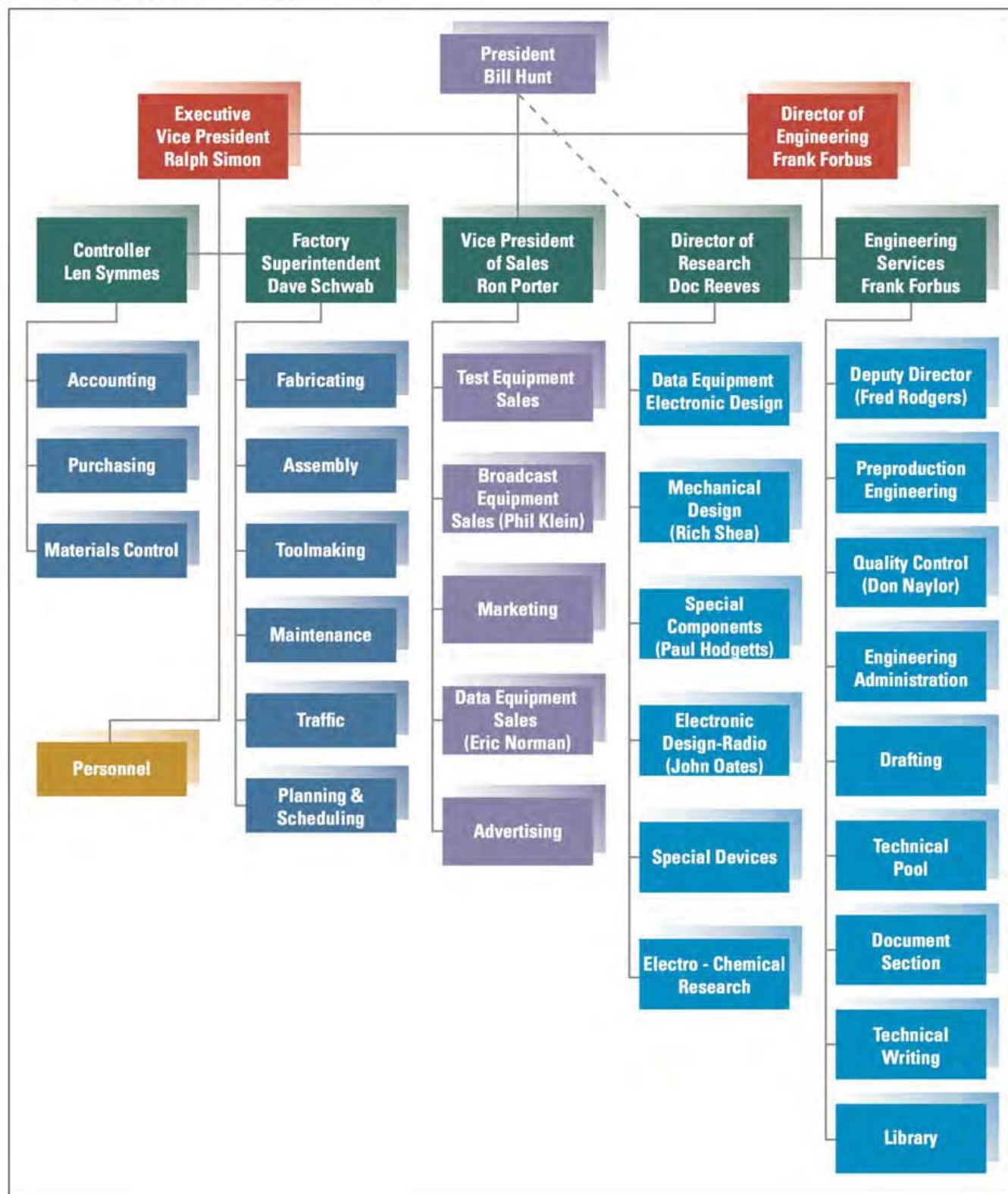
The Engineering Department: Research

According to the organization chart (see Exhibit 1), Frank Forbus was in charge of both research (really the product development function) and engineering services (which provided engineering support). To Forbus, however, the relationship with research was not so clear-cut:

Doc Reeves is one of the world's unique people, and none of us would have it any other way. He's a creative genius. Sure, the chart says he works for me, but we all know Doc does his own thing. He's not the least bit interested in management routines, and I can't count on him to take any responsibility in scheduling projects, or checking budgets, or what-have-you. But as long as Doc is director of research, you can bet this company will keep on leading the field. He has more ideas per hour than most people have per year, and he keeps the whole engineering staff fired up. Everybody loves Doc—and you can count me in on that, too. In a way, he works for me, sure. But that's not what's important.

EXHIBIT 1

Rondell Data Corporation 1998 Organization Chart



Doc Reeves—unhurried, contemplative, casual, and candid—tipped his stool back against the wall of his research cubicle and talked about what was important:

Development engineering. That's where the company's future rests. Either we have it there, or we don't have it.

There's no kidding ourselves that we're anything but a bunch of Rube Goldbergs here. But that's where the biggest kicks come from—from solving development problems, and dreaming up new ways of doing things. That's why I so look forward to the special contracts we get involved in. We accept them not for the revenue they represent, but because they subsidize the basic development work which goes into all our basic products.

This is a fantastic place to work. I have a great crew and they can really deliver when the chips are down. Why, Bill Hunt and I (he gestured toward the neighboring cubicle, where the president's name hung over the door) are likely to find as many people here at work at 10:00 P.M. as at 3:00 in the afternoon. The important thing here is the relationships between people; they're based on mutual respect, not on policies and procedures. Administrative red tape is a pain. It takes away from development time.

Problems? Sure, there are problems now and then. There are power interests in production, where they sometimes resist change. But I'm not a fighting man, you know. I suppose if I were I might go in there and push my weight around a little. But I'm an engineer and can do more for Rondell sitting right here or working with my own people. That's what brings results.

Other members of the Research Department echoed Doc's views and added some additional sources of satisfaction with their work. They were proud of the personal contacts they built up with customers' technical staffs—contacts that increasingly involved travel to the customers' sites to serve as expert advisers in the preparation of overall system design specifications. The engineers were also delighted with the department's encouragement of their personal development, continuing education, and independence on the job.

But there were problems, too. Rick Shea, of the mechanical design section, noted:

In the old days I really enjoyed the work—and the people I worked with. But now there's a lot of irritation. I don't like someone breathing down my neck. You can be hurried into jeopardizing the design.

John Oates, head of the electronic design section, was another designer with definite views:

Production engineering is almost nonexistent in this company. Very little is done by the preproduction section in engineering services. Frank Forbus has been trying to get preproduction into the picture, but he won't succeed because you can't start from such an ambiguous position.

There have been three directors of engineering in three years. Frank can't hold his own against the others in the company, Kilmann was too aggressive. Perhaps no amount of tact would have succeeded.

Paul Hodgetts was head of special components in the research and development department. Like the rest of the department, he valued bench work. But he complained of engineering services:

The services don't do things we want them to do. Instead, they tell us what they're going to do. I should probably go to Frank, but I don't get any decisions there. I know I should go through Frank, but this holds things up, so I often go direct.

The Engineering Department: Engineering Services

The Engineering Services Department provided ancillary services to R & D and served as liaison between engineering and the other Rondell departments. Among its main functions were drafting; management of the central technicians' pool; scheduling and expediting engineering products; documentation and publication of parts lists and engineering orders; preproduction engineering (consisting of the final integration of individual design components into mechanically compatible packages); and quality control (which included inspection of incoming parts and materials and final inspection of subassemblies and finished equipment). Top management's description of the department included the line, "ESD is responsible for maintaining cooperation with other departments, providing services to the development engineers, and freeing more valuable people in R & D from essential activities that are diversions from and beneath their main competence."

Many of Frank Forbus's 75 employees were located in other departments. Quality control people were scattered through the manufacturing and receiving areas, and technicians worked primarily in the research area or the prototype fabrication room. The remaining ESD personnel were assigned to leftover nooks and crannies near production or engineering sections.

Frank Forbus described his position:

My biggest problem is getting acceptance from the people I work with. I've moved slowly rather than risk antagonism. I saw what happened to Kilmann, and I want to avoid that. But although his precipitate action had won over a few of the younger R & D people, he certainly didn't have the department's backing. Of course, it was the resentment of other departments that eventually caused his discharge. People have been slow accepting me here. There's nothing really overt, but I get a negative reaction to my ideas.

My role in the company has never been well defined really. It's complicated by Doc's unique position, of course,

and also by the fact that ESD sort of grew by itself over the years, as the design engineers concentrated more and more on the creative parts of product development. I wish I could be more involved in the technical side. That's been my training, and it's a lot of fun. But in our setup, the technical side is the least necessary for me to be involved in.

Schwab (production head) is hard to get along with. Before I came and after Kilmann left, there were six months intervening when no one was really doing any scheduling. No work loads were figured, and unrealistic promises were made about releases. This puts us in an awkward position. We've been scheduling way beyond our capacity to manufacture or engineer.

Certain people within R & D—for instance, John Oates, head of the electronic design section—understand scheduling well and meet project deadlines, but this is not generally true of the rest of the R & D department, especially the mechanical engineers who won't commit themselves. Most of the complaints come from sales and production department heads because items—like the 802—are going to production before they are fully developed, under pressure from sales to get out the unit, and this snags the whole process. Somehow, engineering services should be able to intervene and resolve these complaints, but I haven't made much headway so far. I should be able to go to Hunt for help, but he's too busy most of the time, and his major interest is the design side of engineering, where he got his own start. Sometimes he talks as though he's the engineering director as well as president. I have to put my foot down; there are problems here that the front office just doesn't understand.

Salespeople were often observed taking their problems directly to designers, while production frequently threw designs back at R & D, claiming they could not be produced and demanding the prompt attention of particular design engineers. The latter were frequently observed in conference with production supervisors on the assembly floor. Frank went on:

The designers seem to feel they're losing something when one of us tries to help. They feel it's a reflection on them to have someone take over what they've been doing. They seem to want to carry a project right through to the final stages, particularly the mechanical people. Consequently, engineering services people are used below their capacity to contribute and our department is denied functions it should be performing. There's not as much use made of engineering services as there should be.

Frank Forbus's technician supervisor added his comments:

Production picks out the engineer who'll be the "bum of the month." They pick on every little detail instead of using their heads and making the minor changes that have to be made. The 15-to-20-year people shouldn't have to prove

their ability any more, but they spend four hours defending themselves and four hours getting the job done. I have no one to go to when I need help. Frank Forbus is afraid. I'm trying to help him but he can't help me at this time. I'm responsible for fifty people and I've got to support them.

Fred Rodgers, whom Frank had brought with him to the company as an assistant, gave another view of the situation:

I try to get our people in preproduction to take responsibility, but they're not used to it and people in other departments don't usually see them as best qualified to solve the problem. There's a real barrier for a newcomer here. Gaining people's confidence is hard. More and more, I'm wondering whether there really is a job for me here.

(Rodgers left Rondell a month later.) Another of Forbus's subordinates gave his view:

If Doc gets a new product idea, you can't argue. But he's too optimistic. He judges that others can do what he does—but there's only one Doc Reeves. We've had 900 production change orders this year—they changed 2,500 drawings. If I were in Frank's shoes I'd put my foot down on all this new development. I'd look at the reworking we're doing and get production set up the way I wanted it. Kilmann was fired when he was doing a good job. He was getting some system in the company's operations. Of course, it hurt some people. There is no denying that Doc is the most important person in the company. What gets overlooked is that Hunt is a close second, not just politically but in terms of what he contributes technically and in customer relations.

This subordinate explained that he sometimes went out into the production department but Schwab, the production head, resented this. Personnel in production said that Kilmann had failed to show respect for old-timers and was always meddling in other departments' business. This was why he had been fired, they contended.

Don Taylor was in charge of quality control. He commented:

I am now much more concerned with administration and less with work. It is one of the evils you get into. There is tremendous detail in this job. I listen to everyone's opinion. Everybody is important. There shouldn't be distinctions—distinctions between people. I'm not sure whether Frank has to be a fireball like Kilmann. I think the real question is whether Frank is getting the job done. I know my job is essential. I want to supply service to the more talented people and give them information so they can do their jobs better.

The Sales Department

Ron Porter was angry. His job was supposed to be selling, he said, but instead it had turned into settling disputes inside the plant and making excuses to waiting customers. He jabbed a finger toward his desk:

You see that telephone? I'm actually afraid nowadays to hear it ring. Three times out of five, it will be a customer who's hurting because we've failed to deliver on schedule. The other two calls will be from production or ESD, telling me some schedule has slipped again.

The Model 802 is typical. Absolutely typical. We padded the delivery date by six weeks, to allow for contingencies. Within two months, the slack had evaporated. Now it looks like we'll be lucky to ship it before Christmas. (It was now November 28.) We're ruining our reputation in the market. Why, just last week one of our best customers—people we've worked with for 15 years—tried to hang a penalty clause on their latest order.

We shouldn't have to be after the engineers all the time. They should be able to see what problems they create without our telling them.

Phil Klein, head of broadcast sales under Porter, noted that many sales decisions were made by top management. Sales was understaffed, he thought, and had never really been able to get on top of the job.

We have grown further and further away from engineering. The director of engineering does not pass on the information that we give him. We need better relationships there. It is very difficult for us to talk to customers about development problems without technical help. We need each other. The whole of engineering is now too isolated from the outside world. The morale of ESD is very low. They're in a bad spot—they're not well organized.

People don't take much to outsiders here. Much of this is because the expectation is built up by top management that jobs will be filled from the bottom. So it's really tough when an outsider like Frank comes in.

Eric Norman, order and pricing coordinator for data equipment, talked about his own relationship with the Production Department:

Actually, I get along with them fairly well. Oh, things could be better of course, if they were more cooperative generally. They always seem to say, "It's my bat and ball, and we're playing by my rules." People are afraid to make production mad; there's a lot of power in there. But you've got to understand that production has its own set of problems. And nobody in Rondell is working any harder than Dave Schwab to try to straighten things out.

The Production Department

Dave Schwab had joined Rondell just after the Vietnam War, in which he had seen combat duty as well as intelligence duty. Both experiences had been useful in his first year of civilian employment at Rondell. The factory superintendent and several middle managers had been, apparently, indulging in highly questionable side deals with Rondell's suppliers. Dave Schwab had gathered evidence, revealed the

situation to Bill Hunt, and stood by the president in the ensuing unsavory situation. Seven months after joining the company, Dave was named factory superintendent.

His first move had been to replace the fallen managers with a new team from outside. This group did not share the traditional Rondell emphasis on informality and friendly personal relationships and had worked long and hard to install systematic manufacturing methods and procedures. Before the reorganization, production had controlled purchasing, stock control, and final quality control (where final assembly of products in cabinets was accomplished). Because of the wartime events, management decided on a checks-and-balance system of organization and removed these three departments from production jurisdiction. The new production managers felt they had been unjustly penalized by this organization, particularly since they had uncovered the behavior that was detrimental to the company in the first place.

By 1998, the production department had grown to 500 employees, 60 percent of whom worked in the assembly area—an unusually pleasant environment that had been commended by *Factory* magazine for its colorful decoration, cleanliness, and low noise level. An additional 30 percent of the work force, mostly skilled machinists, staffed the finishing and fabrication department. About 60 others performed scheduling, supervisory, and maintenance duties. Production workers were nonunion, hourly-paid, and participated in both the liberal profit-sharing program and the stock purchase plan. Morale in production was traditionally high, and turnover was extremely low.

Dave Schwab commented:

To be efficient, production has to be a self-contained department. We have to control what comes into the department and what goes out. That's why purchasing, inventory control, and quality ought to run out of this office. We'd eliminate a lot of problems with better control there. Why, even Don Taylor in QC would rather work for me than for ESD; he's said so himself. We understand his problems better.

The other departments should be self-contained too. That's why I always avoid the underlings and go straight to the department heads with any questions. I always go down the line.

I have to protect my people from outside disturbances. Look what would happen if I let unfinished, half-baked designs in here—there'd be chaos. The bugs have to be found before the drawings go into the shop, and it seems I'm the one who has to find them. Look at the 802, for example. (Dave had spent most of Thanksgiving red-penciling the latest set of prints.) ESD should have found every one of those discrepancies. They just don't check drawings properly. They change most of the things I flag, but then they fail to trace through the impact of those changes on the rest of the design. I shouldn't have to do

that. And those engineers are tolerance crazy. They want everything to a millionth of an inch. I'm the only one in the company who's had any experience with actually machining things to a millionth of an inch. We make sure that the things that engineers say on their drawings actually have to be that way and whether they're obtainable from the kind of raw material we buy.

That shouldn't be production's responsibility, but I have to do it. Accepting bad prints wouldn't let us ship the order any quicker. We'd only make a lot of junk that had to be reworked. And that would take even longer.

This way, I get to be known as the bad guy, but I guess that's just part of the job. (He paused with a wry smile.) Of course, what really gets them is that I don't even have a degree.

Dave had fewer bones to pick with the Sales Department because, he said, they trusted him.

When we give Ron Porter a shipping date, he knows the equipment will be shipped then.

You've got to recognize, though, that all of our new-product problems stem from sales making absurd commitments on equipment that hasn't been fully developed. That always means trouble. Unfortunately, Hunt always backs sales up, even when they're wrong. He always favors them over us.

Ralph Simon, age 65, executive vice president of the company, had direct responsibility for Rondell's production department. He said:

There shouldn't really be a dividing of departments among top management in the company. The president should be czar over all. The production people ask me to do something for them, and I really can't do it. It creates bad feelings between engineering and production, this special attention that they [R & D] get from Bill. But then Hunt likes to dabble in design. Schwab feels that production is treated like a poor relation.

The Executive Committee

At the executive committee meeting on December 6, it was duly recorded that Dave Schwab had accepted the prints and specifications for the Model 802 modulator and had set Friday, December 29, as the shipping date for the first 10 pieces. Bill Hunt, in the chairperson's role, shook his head and changed the subject quickly when Frank tried to open the agenda to a discussion of interdepartmental coordination.

The executive committee itself was a brainchild of Rondell's controller, Len Symmes, who was well aware of the disputes that plagued the company. Symmes had convinced Bill Hunt and Ralph Simon to meet every two weeks with their department heads, and the meetings were formalized with Hunt, Simon, Ron Porter, Dave Schwab, Frank Forbus, Doc Reeves, Symmes, and the personnel director attending. Symmes explained his intent and the results:

Doing things collectively and informally just doesn't work as well as it used to. Things have been gradually getting worse for at least two years now. We had to start thinking in terms of formal organization relationships. I did the first organization chart, and the executive committee was my idea too—but neither idea is contributing much help, I'm afraid. It takes top management to make an organization click. The rest of us can't act much differently until the top people see the need for us to change.

I had hoped the committee especially would help get the department managers into a constructive planning process. It hasn't worked out that way because Mr. Hunt really doesn't see the need for it. He uses the meetings as a place to pass on routine information.

Merry Christmas

"Frank, I didn't know whether to tell you now, or after the holiday." It was Friday, December 22, and Frank Forbus was standing awkwardly in front of Bill Hunt's desk.

"But, I figured you'd work right through Christmas Day if we didn't have this talk, and that just wouldn't have been fair to you. I can't understand why we have such poor luck in the engineering director's job lately. And I don't think it's entirely your fault. But. . ."

Frank only heard half of Hunt's words and said nothing in response. He'd be paid through February 28. . . . He should use the time for searching. . . . Hunt would help all he could. . . . Jim Kilmann was supposed to be doing well at his own new job and might need more help. . . .

Frank cleaned out his desk and numbly started home. The electronic carillon near his house was playing a Christmas carol. Frank thought again of Hunt's rationale: Conflict still plagued Rondell—and Frank had not made it go away. Maybe somebody else could do it.

"And what did Santa Claus bring you, Frankie?" he asked himself.

"The sack. Only the empty sack."